upon this mixed material show that there are at least two types of testes as regards the chromosomes.

The first type has spermatogonia with 40 chromosomes of various sizes; primary spermatocytes with 21, all of which divide equally; secondary spermatocytes with 21, two of which do not divide but pass directly into different spermatids each of which then possess 20 chromosomes. The two chromosomes which do not divide in the second division act as a typical XY pair and always appear near the center of the chromosome group in this division but their behavior is not sufficiently different to enable them to be identified before this stage.

The second type has spermatogonia provided apparently with 8 or 10 more chromosomes than the first type. The primary and secondary spermatocytes seem to have as a distinguishing mark a group of very small chromosomes near the center of the larger group. Neither the number nor the behavior of the chromosomes in the spermatids has been determined although some interesting conditions are suggested by the rather meager observations made to date.

Another interesting though not necessarily important fact is that among the individuals collected in July few possessed testes of the second type while a large percentage of those collected in September did possess cells of that type.

In addition to the interest attached to spermatogenesis these forms seem to offer an opportunity to determine possible correlation between the chromosome differences and somatic variations as soon as the individual origin of the two kinds of germ cells can be determined.

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NOTES ON COLLECTING AND MOUNTING ROTIFERS

C. F. Rousselet, the veteran English naturalist (J. Q. M. C., Nov. 1917) sums up methods which he has worked out for collecting, handling, preserving and mounting rotifers.

For a collecting stick he recommends a walking stick with a telescopic joint, with a ring net 6x5½ inches and 6 inches long, made of bolting silk No. 15 or 16. Silk lasts longer than mull and does not clog or shrink as it does.

The bottled materials collected are placed, on reaching home, in aquaria with 7x7 inch parallel sides one and one-fourth inch in depth from back to front. After a few hours the debris will have settled, and if a strong light be placed at one face of the aquarium the free-swimming rotifers will collect on the side toward the light, and can be discovered with a lens and be picked up with a pipette. In solid watch glasses these general collections can be examined quickly for new species with the low power of the binocular and unfamiliar forms transferred to the live-box or the micro-glass trough for special study.

Narcotising the mass of rotifers in the watch glass is readily effected by 1% cocaine. They may be killed and fixed by a drop of ½ to ⅛% osmic acid. They should be exposed to the osmic acid for a minute only and then removed to formalin of 2½% strength, changing it several times until well washed.

The sorting out of different species is done under the binocular by means of a bristle mounted in a suitable handle. They are then picked up with a fine pipette and placed in an appropriate micro-cell, and finally mounted in 2½% formalin.

The ringing of the micro-cells may be done as follows: first a thin ring of picture copal varnish; then several coats of Heath's cement (gold size-shellac-India rubber); finally finishing with three more coats of gold size.

METHODS OF PRESERVING CERTAIN MARINE BIOLOGICAL SPECIMENS

F. Martin Duncan (J. R. M. S., Dec. 1917) brings together methods which he has found most practical and successful in preserving marine plant and animal life and in preparing it for microscopic examination. Many of these methods are standard; but summarizing some of them may be of value.

Anaesthetising

Place the smaller and specially sensitive medusæ in just sufficient sea-water for free expansion and swimming, and add two drops of 1% solution of hydrochloride of cocaine, gently stirring with a glass rod. Repeat at five minute intervals until the tentacles do not contract when gently touched. Add 10-20 cc. of 4% formaldehyde solution, stirring for several minutes. Store in 10% formaldehyde. Do not allow specimens to remain in cocaine longer than absolutely necessary before adding the formaldehyde, as the former softens the jelly of the medusæ.